

ABSTRACT

A method for making hollow spheres of alumina or aluminate comprises: coating polymeric beads with an aqueous solution of an alumoxane, drying the beads so as to form an alumoxane coating on the beads; heating the beads to a first temperature that is sufficient to convert the alumoxane coating to an amorphous alumina or aluminate coating and is not sufficient to decompose the polymeric beads; dissolving the polymeric bead in a solvent; removing the dissolved polymer from the amorphous alumina or aluminate coating; and heating the amorphous alumina or aluminate coating to a second temperature that is sufficient to form a hollow ceramic sphere of desired porosity and strength. The hollow spheres can be used as proppants or can be incorporated in porous membranes.